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GEOGRAPHICAL NOTES.

A NEW GEOGRAPHICAL SOCIETY.—The *National Geographic Society* has been incorporated at Washington, D. C., for one hundred years.

The officers elected for the year 1888 are: Gardiner G. Hubbard, President; H. G. Ogden, of the U. S. Coast and Geodetic Survey, Com. J. R. Bartlett, of the Hydrographic Office, Gen. A. W. Greely, Chief Signal-Officer, Dr. C. Hart Merriam, Department of Agriculture, and A. H. Thompson, of the U. S. Geological Survey, Vice-Presidents; C. J. Bell, Treasurer; and Henry Gannett, of the U. S. Geological Survey, and George Kennan, Secretaries; and Managers Dr. J. C. Welling, President of the Columbian University, W. B. Powell, Supt. of Schools, Washington, Capt. Rogers Birnie, Jr., U. S. A., W. D. Johnson and Marcus Baker, of the U. S. Geological Survey, Henry Mitchell, U. S. Coast and Geodetic Survey, G. Brown Goode, National Museum, and Cleveland Abbe, U. S. Signal Office.

Washington possesses great resources for the collection and dissemination of geographical intelligence, and these will, undoubtedly, be turned to account under an administration composed of men already well-known for their services to the cause of science.

WATER-SPOUTS OFF THE ATLANTIC COAST.—In a Supplement to the *Pilot Chart of the North Atlantic* for March, 1888, the U. S. Hydrographic Office shows the

position of 14 vessels, from which water-spouts were observed between January 12, and February 29, of this year.

In 11 cases the vessels were within the area enclosed by the meridian of Bermuda on the E., the U. S. coastline on the W., Lat. 40° on the N., and the N. coast of Cuba on the S. The accompanying text of the Chart is by Mr. Everett Hayden, and is here given in a condensed form.

Water-spouts are special cases of whirlwinds. A layer of warm, moist air at the surface of the ocean may sometimes have above it a layer of cooler, drier air. Sooner or later the warm air rises through the cooler air. This process is sometimes gradual over large areas, but is, at other times, more local, and there seems to be formed in the upper layer an opening through which the lower drains upward, as through a funnel.

When there are great differences of temperature and moisture, and the supply of warm, moist air at the surface is great, the action becomes very intense, and still more so as the air rises, because the moisture is condensed and the latent heat liberated.

As the surface air escapes upward through the opening, it takes a rotary motion, the velocity of which increases towards the axis of the funnel and a partial vacuum is created, as indicated by the low reading of the barometer at the centre of a cyclone. In a great cyclone, or hurricane, the direction of rotation is determined by the revolution of the earth about its axis, and this rotation is, in the Northern Hemisphere, invariably *against*, and in the Southern *with* the hands of a watch, as you look down on it, lying face up. This law holds

good in most cases, but not always, for tornadoes and water-spouts.

When a whirlwind is thus formed over the ocean, water is often drawn up the centre of the whirl by the suction created.

When a spout is forming, the upper portion is often visible first, seeming to grow downward from the clouds. Observation with a telescope shows that the motion in the column itself is upward, though the moisture in the rising air is condensed lower and lower down, and makes the whirl appear to be actually descending.

Perhaps the most interesting cases were those reported January 26, 27, and 28 (all near together and less than 4° E. of the New Jersey coast), for the reason that they were clearly associated with a low-barometer area of considerable energy, which moved across the great lakes on the 25th, and was central off Nantucket on the 26th. It has been shown by the U. S. Signal Service that tornadoes on land take place almost invariably in the southern quadrants of an area of low barometer. The reports in the three cases mentioned seem to leave no doubt that whirlwinds and water-spouts are sometimes associated in a similar way with cyclonic storms at sea.

The American bark *Reindeer*, Capt. Strandt, was the only vessel of the 14 that received any damage. On February 11, she was in the Gulf Stream, Lat. $32^{\circ} 04'$, Lon. $76^{\circ} 06'$, running towards New York in squally weather, with light, southerly winds, when a water-spout dismasted her below the heads of the three lower masts. No warning was given; the weather was apparently

clear at the time, and the whole affair was over in a few minutes.

It is the intermingling of the warm, moist air that hangs over the Gulf Stream, and the cool, dry air brought from the land by the north-westerly winds that generates these dangerous whirlwinds on the ocean.

MINERAL PRODUCTS OF THE UNITED STATES, 1882-1886.—The U. S. Geological Survey has published in tabular form the amount and value of the mineral products of the country for the calendar years 1882-1886.

The totals are in value :

NON-METALLIC PRODUCTS.

1882.	1883.	1884.	1885.	1886.
\$228,410,380.	\$242,111,859.	\$220,050,674.	\$240,114,544.	\$243,963,063.

METALLIC PRODUCTS.

1882.	1883.	1884.	1885.	1886.
\$219,755,109.	\$203,128,859.	\$186,426,074.	\$181,599,365.	\$215,364,825.

UNSPECIFIED.

1882.	1883.	1884.	1885.	1886.
\$8,000,000.	\$8,000,000.	\$7,000,000.	\$7,000,000.	\$6,000,000.

The product of Bituminous coal in the five years was 333,774,573 tons, valued at \$396,560,057; that of Anthracite, 167,952,114 tons, worth \$366,955,729; that of Petroleum, 127,495,643 barrels, valued at \$109,143,-395; that of Natural Gas, in value, \$16,851,350. The increase in this last product is enormous, from 1882, when the amount was \$215,000, to 1886, when it reached the figure of \$9,847,150. The value of the

Lime produced in the five years was \$100,650,000; that of the Building Stone, \$98,000,000; that of the Salt, \$22,310,826. Of Pig iron, 23,044,556 tons were produced, worth \$431,916,413; of Silver, 189,031,513 Troy ounces, worth \$244,400,000; of Gold, 7,933,010 Troy ounces, worth \$160,101,000; of Copper (including that made from imported pyrites) 688,801,422 pounds, valued at \$87,029,710; and of Lead, 1,362,788 pounds, valued at \$58,621,491. Zinc was produced to the value of about \$3,500,000; and Quicksilver to that of \$1,200,000, yearly.

THE SIZE OF IOWA.—*Triübner's Literary Record* is an authority which may generally be trusted for statements of fact; and it is with surprise that the reader comes upon the following passage in a notice of “Agriculture in the U. S. A.” in No. 236:

“There appears to be plenty of room for settlers in Iowa, as it appears that during the past five years 100,974,134 acres of land have been disposed of, equalling four states as large as Indiana, or three-fourths of Germany.” 100,974,134 acres are equal to 157,772 square miles. Iowa contains, according to the census of 1880, 55,475 square miles, and Indiana 35,910; while the area of the German Empire is 211,196 square miles.

The *Record* seems to have taken too literally the ample phrase, which it quotes from the report of the Iowa State Agricultural Society :

“Nature (in Iowa), is large, bountiful, leaving nothing lacking, having nothing undesirable.”

A State so blest should have and dispose of any possible number of acres.

CLIMATOLOGICAL DICTIONARY.—Mr. L. Cruls, the distinguished Director of the Imperial Observatory at Rio de Janeiro, has undertaken the task of preparing a Universal Climatological Dictionary, to be printed under the auspices and at the expense of the Observatory.

The director asks the co-operation of Observatories and Meteorological Institutions throughout the world and furnishes a printed form to be filled out and transmitted to the Imperial Observatory.

This form is to give :

Place of Observation (in Province, State or Country.)

Longitude (E. or W. of Greenwich), and Latitude.

Number of Years of Observation.

Height above Sea-Level (in Metres or Feet.)

Temperature :—(Centigrade or Fahrenheit.)—

Mean for each month and each year.

Highest, monthly, each month and each year.

Lowest, “ “ “ “ “

Humidity, “ “ “ “ “

Cloudiness, “ “ “ “ “

(0=perfectly clear sky; 10=entirely covered.)

Rainy days for each month and each year.

(*Rain* includes snow, fog, dew, etc.)

Rainfall (in millimetres or inches), for each month and each year.

Stormy days for each month and each year.

Days of frost, “ “ “ “

Prevailing winds, “ “ “ “

Absolute highest temperature—date.

Absolute lowest temperature, “

(Centigrade or Fahrenheit.)

Mean annual barometer (in millimetres or inches.)

Mean annual variation of the barometer, (in millimetres or inches.)

Add the name of the Institution on which the station depends, as—"Signal Service, U. S. Army, Washington, Chief Signal Officer, A. W. Greely."

THE MOTION OF AN EARTH-PARTICLE DURING AN EARTHQUAKE.—Prof. Seikei Sekiya gives in the *Transactions of the Seismological Society of Japan*, Vol. XI, an illustration here reproduced, of a diagram delineating the motion of the earthquake which occurred in Japan, on the 15th of January, 1887, as traced on the plate at Tokio.

The shock began about thirty-five miles S. W. of Tokio, and the waves were propagated nearly two hundred miles to the west and north-east along the Pacific seaboard, and on the north-west nearly to the shore of the Japan Sea. The area affected covered about 32,000 square miles.

The explanation of the figures is :

The model is made in three parts, each showing the motion for twenty seconds, or so ; thus Fig. 1 indicates the motion from the beginning of the shock to the end of the twentieth second, Fig. 2 from the latter instant to the end of the fortieth second, and Fig. 3 thence to the end of the seventy-second second. At that point the vertical motion practically ceased.

The earthquake begins with short period tremors. During the third second there appears a vigorous horizontal motion, N. W. and S. E. (at right angles to the line joining the origin of the disturbance and the instrument) accompanied by a vertical displacement. Both

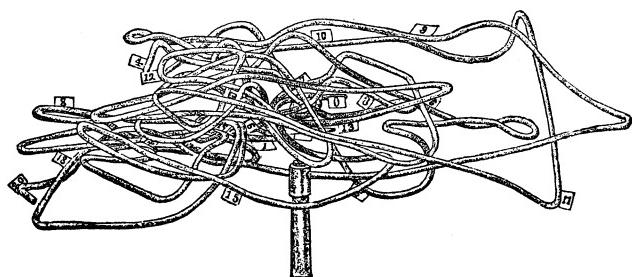


Fig. 1.

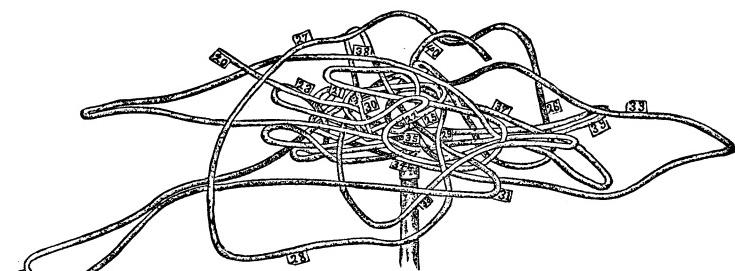


Fig. 2.

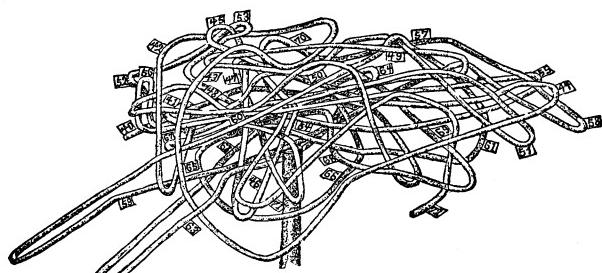


Fig. 3.

THE MOTION OF AN EARTH-PARTICLE DURING AN EARTHQUAKE.

horizontal and vertical motions then continue with great activity. At the ninth second (and again at the tenth), is recorded a vertical motion of $\frac{1}{20}$ ", the largest during the shock, and synchronously with it a horizontal motion of $\frac{1}{5}$ " N. W. and S. E., the complete period of oscillation in both being 1.5 seconds. Vertical motions are most marked during the first part of the disturbance.

The maximum horizontal displacement of nearly $\frac{1}{4}$ " occurs from the thirty-third to the thirty-fourth second with the complete period of two seconds. The direction is then nearly W. S. W. and E. N. E., or in a line with the origin of the shock.

Few up-and-down oscillations occur in Fig. 2.

The principal horizontal motions in Fig. 3 run S. E. and N. W., or transverse to the direction of the origin of the disturbance.

In this Figure several outbursts of upward movement are observed, with inert intervals between them.

In earthquakes the vertical movement usually ceases long before the horizontal. When large vertical motion occurs, there is usually simultaneous large horizontal displacement ; but the latter may be recorded without the former.

THE NAMING OF PLACES.—The Queensland Branch of the Royal Geographical Society of Australia adopted in October last the following resolution : "That the Queensland Branch of the Royal Geographical Society of Australia views with disfavor the tendency exhibited by some recent explorers in New Guinea, in naming their discoveries, to disregard the native names of the most prominent physical features of the country ; that it is

expedient to discourage this growing tendency, and also, in so far as practicable, to preserve the native place-names ; and that all Geographical Societies be invited to co-operate by an expression of opinion."

The expression is sure to be received as information, and laid upon the table, for explorers will follow their own sweet will. They should, nevertheless, be told by all, who can speak with authority, that not to learn and respect and report the native names of places and points and natural features, is to fail in one of their chief duties, and to merit reprobation rather than praise.

MORTALITY ON THE CONGO.—*Le Mouvement Géographique*, of March 11, publishes the official list of the persons (mostly European) engaged in the service of the Congo enterprise from 1879 to December 1887.

The whole number is 427. Of these 189 were Belgians, 89 Englishmen, 50 Swedes, 46 Germans and 15 Danes. No other nationality had a representation of 10; and there were but 5 Americans. There were, in all, 64 deaths ; 15 by accident, and 49 by disease. Of the 49, 37 were cases of fever, the rest of dysentery, congestion and other troubles. The highest mortality was among the English. The Belgians lost 27, the English 19, the Swedes 9, the Germans 3. There was no death among the 15 Danes, the 9 Frenchmen and the 5 Americans. The greatest proportion of deaths occurred in the years 1883–1885, the period of the greatest toils and difficulties.

There is every reason to believe that the death-rate will be reduced with the improvement of the organization of the Free State and the multiplication of comforts.

BURMA.—The *Scottish Geographical Magazine*, for February, has an excellent article on this subject by the late Chief Commissioner of the province, Sir Charles Bernard, K. C. S. I.

Burma extends about 1100 miles from north to south, and 600 miles from China, on the east, to the Bay of Bengal, on the west. It has an area of 280,000 square miles, and is, therefore, much the largest province of the Indian Empire.

The surface is, for the most part, hilly and broken, the level, cultivable land being estimated at barely 50,000 square miles, comprised in the deltas of the Irrawaddy and the other rivers. On the northern boundary are the Patkoi and other mountain ranges, said to be at one point nearly 12,000 feet high; and an immense mountain mass in the north-east divides the province from China. The Shan States form an upland region, cut here and there by deep clefts through which flow the rivers; and buttresses of the Shan mountains come close to the Irrawaddy at Mandalay and the ruby mines further north. These mines are on a plateau 4000 or 5000 feet above the sea.

The rivers are numerous. The Irrawaddy, 11,000 miles long, is navigable by big river steamers for 700 miles, and there are hundreds of miles of cross channels. The Chindwin, 500 miles long, can be navigated for 150 miles all the year, and twice that distance in the rainy season. The other streams have no great depth of water, except in time of flood—about five months of the year.

The extreme rise observed in the Irrawaddy is 44 feet; the average in ordinary years being 35 or 36 feet;

and the river in flood frequently spreads over a breadth of 20 to 25 miles. In the delta the houses are built on piles, and every house is provided with a boat. As the water rises the people retreat to the upper floors, and if a child tumbles into the water, it is fished out, for young and old swim like ducks.

The average yearly rainfall on the coast is 200 inches. At Bassein, Rangoon and other inland places, it amounts to 100 inches, and decreases rapidly to about 35 inches further up the valley. It is again heavier at Mandalay, and still heavier at Bhamo, and at the base of the Shan hills.

Lower Burma has all been surveyed topographically. Something has been done in Upper Burma, but the regular survey is yet to be made.

The relations with Siam and China are friendly.

The Shan States number about 60, large and small, always more or less hostile among themselves. The whole Shan population is about 2,000,000, and some of the larger chiefs have already acknowledged the British supremacy. The policy of the Indian Government is to strengthen the larger States and make them responsible for keeping the peace and protecting the communications.

Sir Charles Bernard estimates the whole population of Burma at a little over 9,000,000, the Burmese proper numbering 5½ millions. He thinks highly of the Burmese. They are manly, cheerful, and courageous, and fairly industrious. They are more generally educated than the Indians; more so, even, than the people of some Northern European countries.

The Burmese women lead a happier life than those of

India. They come out, mix in society, do the marketing, keep shops, and generally share in domestic and social concerns quite as much as Scottish women. They settle their own love affairs, and a Burmese widow can marry again as soon as she gets a chance.

There are in Burma no very rich people, no large landlords, no nobility ; and the only aristocracy is the official one. The general prosperity is great, and the people spend their money freely. Wages are four times as high as in India.

The most respected and influential persons are the Buddhist monks who number about 6,000 in Lower, and perhaps 20,000 in Upper Burma. For the most part, they observe their vows of celibacy and poverty very strictly. If for any reason they desire to return to the world, they are free to throw off the monk's robe, and take up the ordinary duties and pleasures of life. They own no property, and enjoy no endowments, but are supported by their parishioners.

Like the Burmese, the Shans are Buddhists. They are poorer than the Burmese and harder, and they are wonderfully apt traders and pedlars.

The Karens live in Lower Burma. They are agriculturists, and they make steady and capable artizans. They were formerly nature-worshippers, but have been converted by the American Baptist missionaries, and now maintain out of their own resources as many as 600 parishes. Little is known of the other hill-tribes.

The one product of Lower Burma is rice. Upper Burma produces, besides rice, wheat and pulse, and a great deal of cotton, which is exported to China. The vast forests, now under careful supervision, yield teak,

utch gum, india-rubber and wild tea, which is used, not for drink, but as a pickle. The monopoly of this pickle brought to King Thebaw's revenue £80,000 a year. Among the minerals of Upper Burma are iron, copper, lead, gold, silver, marble, coal, jade and rubies. It will not pay to work the iron, copper and lead ; and the gold and silver do not amount to much. The coal is likely to be important. There are three coal-fields ; one close to the railway (from Rangoon), another on the Irrawaddy, half-way from Mandalay to Bhamo, and the third on the Chindwin.

The marble is used for statues of Buddha and for the pagodas. The Burmese mines supply all the jade used in China and Japan, and the Chinese who control the product pay what looks like a trivial royalty of £5,000 a year for the quantity they export.

The Burmese rubies are the finest in the world. The district which produces them covers nearly 200 square miles, and the demand for precious stones being, like human vanity, a constant quantity, there should be a boundless market for these gems.

The Burmese petroleum may some day become valuable, but for the present the American article supplies the demand.

EXPLORATIONS IN BRITISH NORTH BORNEO.—Mr. D. D. Daly, Assistant Resident in charge of Province Dent, gives, in the Proceedings of the Royal Geographical Society for January, an account of his five years' observations. Dent Province occupies the south-western portion of British North Borneo, and presents a nearly blank surface on the map.

The Colony contains 31,000 square miles, with a seaboard of 700 miles, and a total population of 150,000.

The principal land-locked harbors are Gaya, on the west, Kudat, on the north, and Sandakan, the headquarters of the Government, on the east coast.

Besides Dent Province, the divisions are : Keppel Province on the north-west, Alcock Province on the north-east, and the East Coast Residency on the south-east.

Mr. Daly entered the interior from the eastern side by the Kinabatangan River. The first place of importance reached was Malapi, the depot for the edible birds'-nests. These nests are gathered from the Gomanton Caves, about twelve miles north of Malapi. The height of one vault in these caves has been estimated at 900 feet, and some idea of the numbers of the swifts (*Callochia*) may be formed when it is said that a steady column has been timed by watch to fly for three-quarters of an hour from one of the apertures. The birds'-nests are formed of the inspissated saliva of the birds. The yearly product of the caves is valued at \$25,000, and the North Borneo Government let them in 1884 for \$9,000 a year. There are many similar caves along the river.

The land was everywhere rich, and suited to the cultivation of sugar and the sago palm. The latter, the chief product of the west coast, has but lately been introduced in the east.

At the Obang-Obang Mountain, at the head of the Melikop, one of the branches of the Kinabatangan River, Mr. Daly obtained a grand view of the Kinabalu range, which rises to the height of 13,698 feet. The orang-utans abound in this region, and their red-

haired skins are made into war-cloaks by the Tungaras. These people had not yet learned the use of guns.

On the Padas River, which empties into the sea on the west coast, there were vast sago plantations and rice-fields. The sago is the pith of the tree, which is cut down when eight or ten years old and split open lengthwise. The pith is chopped out with bamboo scoops, passed through a sieve, and dried in the sun, and so becomes the sago of commerce. As fast as the palms are cut down fresh suckers spring up, so that the plantation renews itself.

The summits of the western ranges are very narrow and precipitous, and many land-slips, caused by the beating of the south-west monsoons on the sandstone formation, are visible from the sea.

On the Pagalan River, a Murut chief placed his house at the disposal of Mr. Daly's party. The house was very clean, but there were fifty-two human heads and numbers of human bones hanging from the rafters. Mr. Daly asked the chief to remove these ghastly ornaments. This request was cheerfully granted, with a certain air of pity for the white man's squeamishness. Some of the Murut tribes have given up the practice of head-hunting, but others, far removed from contact with the English, still maintain it.

The people were found to be friendly and, on the whole, fairly industrious. They are very superstitious, and pay great attention to omens, such as the flight of birds, the starting of a deer, and the like.

In all the rivers, crocodiles are numerous. Mr. Daly saw one captured and towed to the bank. It was fourteen feet long, and there was joy over it, for it had eaten

one of the chief's brothers-in-law. A chief, with his many wives, is generally well supplied with brothers-in-law, and is bound to contribute to their support; and Mr. Daly is led to believe that a Murut does not look upon a crocodile with a wholly malevolent eye.

At Api, on the Padas River, a conference took place and a treaty of peace was signed, in Mr. Daly's presence, between the Muruts and their ancient enemies, the Peluans, both tribes recognizing the authority of the North Borneo Government.

The form of oath, taken by each chief on this occasion, is equally precise and comprehensive, and might be copied with advantage in the practice of more civilized nations.

Each + denotes a chop at a stick :

"I follow the authority of the Government of the British North Borneo Company +. The Sandewar + and the Peluan + people are now of one mind +. If I kill a Sandewar (or Peluan) man + when I go to the water may I not be able to drink + when I go to the jungle may I not be able to eat + may my father die + may my mother die + may my wife die + may my children die + may my house be burned down + may the padi not grow in my fields + may a crocodile swallow me + may the eggs never be hatched in my fowl-house + may I never catch a fish when I go fishing + may my life be ended + I cut this stick + as if I was chopping my own head off + the Great Spirit is my witness + may this stick grow into life again + if ever I kill or take any more heads + and I follow all the customs of the British North Borneo Company + and I take this oath with a

sincere heart + and I shall pay the poll-tax of the Company +."

THE POPULATION OF CHINA.—The *Journal of the Statistical Society* for December, 1887, gives from various sources, English, Chinese and Russian, some interesting facts concerning the census methods and the population of China. The census law forms a part of the military administration, under the particular heading: "A Law for searching out Traitors and Spies." In every city, town, village and hamlet it is provided that for every ten families there shall be a tablet on which are to be written the names and number of the inhabitants. Ten families make a *chia*, and an elder is in charge of these. A bailiff, or *pau chia*, is set over every ten elderships. A registration form is filled with the name of each householder, and the number of persons in his family. The bailiff is expected to know the movements of every one in the district, whether at home or abroad, when he leaves home and when he returns, what he is doing, and the like. Inn-keepers and heads of monasteries are required to keep books of registration, and to enter therein the name and occupation of each traveller or visitor.

Every year the number of inhabitants in each place must be reported to the Board of Revenue.

According to a tabular statement published by the Board, the population of the Empire (exclusive of five provinces, from which returns had not been received,) was, in 1885, 319,383,500. The estimated population of the five provinces omitted was 60,000,000.

A table drawn up by the Russian statistician, Mr.

Popoff, from official documents brought down to the year 1879, for eight of the provinces, and to 1882 for the other ten (Shing-King is omitted), shows a total of 382,078,860. In 1842 the population numbered 413,021,452.

The most populous of all the provinces is Sze-chuen, with 67,712,897 in Mr. Popoff's table, for 1882, and 71,073,730 in 1885, according to the Board of Revenue.

After making every allowance for the disturbed condition of China in the period between the years 1842 and 1882, and for the destruction caused by the Tae-ping rebellion, it is still not easy to accept the official figures, as tabulated by Mr. Popoff. The province of Sze-chuen, for instance, is credited with a gain in the forty years of 45,455,933. Kuang-tung, which was almost on a level with Sze-chuen in 1842, made a gain in the forty years of but 8,553,646. The next highest gain is 6,717,958 in Shan-tung. Yunnan follows with an increase of 5,897,906, and after it comes Hoo-pi, with 4,780,441.

Three provinces, Kiang-su, Che-Kiang and Chih-li, lose more than 18,000,000 each. An-hwei loses 16,000,000, and Kan-su more than 14,000,000.

Sze-chuen increased in the forty years 200 per cent., Kuang-tung 40 per cent., Shan-tung 23, Yun-nan 100, Hoo-pi less than 17 per cent.

Kiang-su lost 48 per cent., Che-Kiang 62, Chih-li 49, An-hwei 43, and Kan-su more than 72 per cent.

GEOLOGICAL SURVEY OF NEW JERSEY.—The report of Prof. Geo. H. Cook, State Geologist, for the year 1887, is accompanied by an excellent map of the whole State,

on a scale of 5 miles to an inch. A hypsometrical map, on the same scale, will complete the Topographical Atlas of New Jersey, undertaken by the Geological Survey, in 1877, and carried through at a total cost of \$59,892.95, divided equally between the State and the Federal Government.

The Report closes with a tabular statement of the Iron and Zinc production for a number of years. The iron, estimated at 10,000 tons in 1790, reached, in 1870, 362,636, and in 1882, 932,762 tons, the highest figure yet attained. The production, in 1887, was 547,889 tons.

In the Zinc table there are several breaks, but the numbers are consecutive from 1878 to 1887, and show an average annual product of a little over 38,000 tons.

Discovery of America by Northmen.—Address at the Unveiling of the Statue of Leif Eriksen, Delivered in Faneuil Hall, Oct. 29, 1887, by Eben Norton Horsford.

Boston and New York, 1888.

Prof. Horsford says, in his Preface : "I have attempted to present in the address the essential story of the discovery of America by the Northmen, omitting only the matters which properly enough may appear in an account of the life and usages of the people, but which do not so immediately concern the strict history of the Discovery of America."

The attempt is in every way successful, nor can it be believed that the story is to be found elsewhere in a form equally concise and full, and pervaded, at the same time, by a spirit at once so critical and so respectful towards the facts of history.

Certainty, with regard to the landing-place of the Northmen, is not to be hoped for; but Prof. Horsford, basing his argument on a fair interpretation of the records and a comparison of the physical conditions, has brought Leif Eriksen to the coast of Massachusetts as, beyond any reasonable doubt, the true Vinland.

The preparation of this volume, with its admirable illustrations and maps, many of them facsimiles, must have been a labor of love; and a more beautiful book it would be difficult to find.

The Final Results of the Triangulation of the New York State Survey, Together with a Description of the Methods Employed. Also, the Eleventh Annual Report of the Commissioners of the State Survey. Transmitted to the Legislature, March 22, 1887.

Albany, N. Y.: 1887.

The Report of the Commissioners briefly recounts the facts which brought about the representations made by the American Geographical Society, in 1875, and the consequent passage of the Act of April 29, 1876, for "making an accurate trigonometric and topographical survey of the State."

The primary triangulation is now completed for about two-thirds of the State. But little was added to the original appropriation of twenty thousand dollars, and it is at a trifling cost that the work has been performed which Major Powell, Director of the United States Geological Survey, declares to be excellent and admirable.

The Commissioners unanimously recommend the continuance of the survey under the supervision of a commission of five members, who shall serve without com-

pensation, and shall avail themselves, as far as practicable, of the assistance of the United States Coast and Geodetic Survey and the United States Geological Survey. The Director of the latter has proposed that the total cost of the work be divided between the State and the U. S. Geological Survey, an arrangement equally advantageous to both parties, since the triangulation already performed by the State Survey will facilitate and simplify the work on the Topographical Atlas of the country, so far as New York is concerned.

Besides the maps and illustrations in the text and appendices, the volume gives the following :

Map No. 1. Triangulation in Eastern and Central New York.

Map No. 2. Primary Triangulation in the State of New York.

Map No. 3. Triangulation of the Hudson River to Albany.

Map No. 4. Triangulation of the Hudson River, Albany to New Baltimore.

Map No. 5. Triangulation of the Hudson River, New Baltimore to Hudson.

The English in the West Indies, or, The Bow of Ulysses.—By James Anthony Froude.

New York, 1888.

Mr. Froude's book is partly a political pamphlet and partly notes of travel. The fitness of the sub-title may be clear to the author's mind ; to the reader it is more than dim. The motto from Goethe is, on the contrary, significant, for it warns every one, at the outset, that

Mr. Froude looks on those who do not agree with him as enthusiasts, given to making and believing a lie.

The West Indies show, as in a mirror, the demoralized condition to which Ireland will be reduced if Home Rule prevails. This is the burden of Mr. Froude's political song. The islands are ruined, the blacks are making no advances in civilization, and the English power is merely a name.

Salvation lies in ruling the West Indies on the Indian system, that is, by the sword. The obvious difficulty in the case does not seem to disturb Mr. Froude. The blacks of the English West Indies are not a conquered people. They are free men, and most of them were born free, under the English flag. Legally, they are Englishmen. How is England to apply to such a people the military system by which she retains her hold on India? She cannot do it; but she must, according to Mr. Froude, or the blacks will continue to play at Home Rule and go to perdition, and the Irish will follow them, for the modern world is given up to the base instincts of Democracy, and the men that talk have taken the place of the men of action. This deplorable state of things is largely the work of orators, says Mr. Froude, and for the orators, from Demosthenes to Gladstone, he entertains very little respect; which seems to be a pity.

Even with Home Rule, however, the black "brothers-in-law" are declared to be the "most perfectly contented specimens of the human race to be found upon the planet." They are fast travelling, however, towards the savagery and cannibalism of Hayti, and nothing saves them, for the moment, but the presence of the English. This once withdrawn, chaos will come again.

Hayti itself Mr. Froude just looked at ; but he had read Spencer St. John's book, and all that he could learn in the West Indies went to confirm Sir Spencer's disheartening statements.

Mr. Froude's own studies of the negro in Barbadoes, and Jamaica, and Trinidad are interesting and instructive. He has an eye for character and there is no gainsaying some of his conclusions. When he is willing to forget the bad example of Demosthenes and Gladstone, and is content to tell us what he saw, he is very entertaining. He has a great admiration for the men of the sixteenth century, and the laurels of Drake will not allow him to observe the proprieties. The sight of an English man-of-war on the way to Venezuela suggests to him what a good thing it would be to "pull Guzman's nose"; Guzman being Guzman Blanco, the President of Venezuela. When Drake said he would singe the Spanish King's beard, he was disrespectful to the mightiest monarch then living ; but he was a man of action, and he went in person to do the singeing. Guzman Blanco is not Philip II., and Mr. Froude resembles Drake, with a difference.

The charm of his style and his evident sincerity may atone for some of Mr. Froude's shortcomings, but they do not always cover his inaccuracy.

In order to clinch an argument, he says that Spanish sugar goes free into the American market ; but no one in the United States is aware of the fact.

On p. 340 we are told that "St. Domingo, or Espanola, of which Hayti is the largest division, was the earliest island discovered by Columbus, and the finest in the Caribbean Ocean."

Guanahani, the first island discovered by Columbus, and by him named San Salvador, has not been identified, but it was certainly not St. Domingo ; neither is Hayti the larger of the two republics in the island. Santo Domingo, the eastern division, has an area of about 20,000 square miles, and that of Hayti, the western division, is nearly 10,000.

For a scholar who was able to misinterpret with success so many of the documents in the Archives of Simancas, Mr. Froude is strangely weak in Spanish. He does not believe that the name Barbadoes is derived from the Spanish word, *Barbados*, which means simply *bearded*, and requires the addition of a substantive in order to make sense ; and it never occurs to him that there may be a Spanish noun, *barbado*. There is still some doubt as to the origin of the name, but the probabilities are in favor of the derivation given by Delitsch : "Barbados, so called from a tree (*Ficus barbata*) which sends down from its branches tufted shoots that take root ;" and the Spanish word *barbados* has, among its meanings, one which agrees fairly well with Delitsch's description : "The offshoots of a tree, which grow around it."

The word *morro*, which means a rounded hill, or eminence, Mr. Froude persistently spells *moro* ; as if a man were to write the *below* for the *bellow* of a bull.

Columbus masquerades, in a costume half-French, half-Spanish, as Christophe Colon ; and M. de Lesseps would hardly recognize his own great work under the name of the Darien Canal.

The book is brought out in handsome style, and the illustrations, from sketches by the author, are very good.

Haiti en 1886, par Paul Deléage.

Paris, 1887.

M. Deléage has much to say of Gen. Salomon's virtues—not the least of these being his marriage to a French wife—of the Haytian Bank, and of the polished tone that prevails in the debates of the Haytian Parliament; but in all his 400 pages there is nothing that throws light on the actual condition of Hayti; and his statistics can hardly be trusted.

The chief product of the republic is coffee, and we are told that 75,000,000 lbs. were exported in 1886, out of a crop of 100,000,000 lbs. Van Delden Laérne thinks the whole Haytian crop is below 60,000,000 lbs.

The *Almanach de Gotha* and the *Statesman's Year-Book* both put the exports of coffee for 1886 at 58,000,-000 lbs.; and it may be doubted whether the available crop much exceeded this figure.

M. Deléage foresees a great future for the Haytians, who hold in their hands, he says, the keys of the Panama Canal.

This wholly unexpected revelation certainly relieves M. de Lesseps of some responsibility, and, at the same time, explains in a measure his present purpose of providing the Canal with locks; but why the keys should have been entrusted to the Haytians rather than to the Cubans, or the Jamaicans, there is nothing to show.

Like many travelled Frenchmen, M. Deléage is fond of using what he takes to be English words.

He landed, of course, upon a *warf*, and rode to his hotel in a *buss*. He found the people refreshing themselves with *cok's talls*, and he was, perhaps, under the influence of this pernicious beverage when he began his

seventh chapter with a quotation from "the Greek poet," Thucydides.

L'Inde Anglaise, Son État Actuel, Son Avenir. Pré-cédée d'une Introduction sur l'Angleterre et la Russie par J. Barthélemy-Saint Hilaire.

Paris, 1887.

M. Barthélemy-Saint Hilaire does not concern himself with the origin of England's rule in India. He studies her work in the peninsula and her relations to its many different races, and he is brought to the conclusion that she deserves well of the world for the manner in which she meets her responsibilities. "Since the rebellion of 1857," he says, "England has undertaken and has unremittingly pursued the education of India, with a steadiness and a wisdom that call for full recognition * * *"

What is to be the outcome of this prodigious undertaking? How long a time, how many centuries, indeed, will it require for its accomplishment?

All that we can hope for is that England, so deeply impressed with the seriousness of her task, may not be disturbed in her equally worthy and gigantic enterprise, nor forced to abandon it by any complications of external policy. There is nothing to indicate that any one of the great nations could take her place to advantage, and continue to render to India the services now performed by this unheralded guardianship."

Duties of a like nature with those of England in India devolve upon the other European Powers in their colonies and protectorates, and the result of their combined action will be, M. Barthélemy-Saint-Hilaire considers, the ultimate, if remote, triumph of Christianity

throughout the world. He calls attention to the uninterrupted expansion of Christian dominion during the past four centuries, and to the steadiness with which the forces represented by Christianity press against the two or three bulwarks—China, India, Africa—which still resist.

To this practical statesman and accomplished scholar the work of Russia is not less important than that of England, and he looks forward to the apparently inevitable conflict between these Powers as to a calamity.

He does not agree with those who profess to discover symptoms of disintegration in the Russian Empire. He believes, on the contrary, that Russia possesses remarkable cohesive force and a national vitality equal to any strain.

Were the Toltecs an Historic Nationality? By Daniel G. Brinton, M. D. Philadelphia, 1887.

In this paper, read before the American Philosophical Society, Sept. 2, 1887, and now issued in pamphlet form, Dr. Brinton makes short work of the Toltec myth. He first restates the current opinion, as found in the works of most reputable writers, and then gives his own in the following words :

Tula was merely one of the towns built and occupied by that tribe of the Nahuas known as *Azteca* or *Mexica* whose tribal god was Huitzilopochtli, and who finally settled at Mexico-Tenochtitlan (the present city of Mexico); its inhabitants were called Toltecs, but there was never any such distinct tribe or nationality; they were merely the ancestors of this branch of the Azteca, and when Tula was destroyed by civil and foreign wars,

these survivors removed to the valley of Mexico, and became merged with their kindred ; they enjoyed no supremacy, either in power or in the arts ; and the Toltec "empire" is a baseless fable.

What gave them their singular fame in later legend was partly the tendency of the human mind to glorify the "good old times" and to merge ancestors into divinities, and especially the significance of the name Tula, "the Place of the Sun," leading to the confounding and identification of a half-forgotten legend with the ever-living light-and-darkness myth of the gods Quetzal-coatl and Tezcatlipoca."

The legend relates that the Azteca, or Mexica,—names applied to the same tribe,—after living for some generations in harmony, fell out and separated, at a time somewhere between the eighth and the eleventh centuries of our era. Dr. Brinton understands this to have been the separation of two "totems."

The followers of the tribal goddess Malinalxochitl entered at once the Valley of Mexico, while the followers of Huitzilopochtli passed on to the plain of Tula, and settled on the Coatepetl (the Serpent Mount or Snake-Hill), the central figure in all the wonderful stories about the Toltecs. Here they built houses and a temple to their god ; and, after an indeterminate time, driven out by civil strife and war-like neighbors, they abandoned Tula and journeyed into the Valley of Mexico, there to found the famous city of that name.

The plain meaning of the narrative is, according to Dr. Brinton, that Tula was merely one of the stations occupied by the Aztecs in their migration, and that a

sound historical method can have nothing to do with Quetzalcoatl and the refined Toltecs.

To many sensitive souls this will be little less than flat burglary ; but there is no help for it. Dr. Brinton is not the first and he will not be the last Americanist to shake his head at the Toltecs.

A Brief Narrative of the Journeys of David Thompson in North-Western America. By J. B. Tyrrell, Toronto, 1888.

David Thompson entered the service of the Hudson Bay Company in 1789, when he was 19 years old, and travelled over the great northern wilderness till 1814. For ten years after he was engaged on the Survey of the boundary between Canada and the United States, and in later life made special surveys in Canada. He died at Montreal, in extreme poverty, at the age of 87

Some of his field books and journals are preserved in the office of the Crown Land Department of Ontario, and from these Mr. Tyrrell gives a list of 82 positions determined in the region between the extremes of 90° and 117° , W. Long. and N. Lat. 45° to 58° . The extracts from the journal afford glimpses of a strange existence, that has passed away with the system under which it was developed.

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Navigation of the Kuango as far as the Kingunji Rapids, undertaken by Dr. Mense, in company with the Rev. R. Grenfell—Wissmann's Journey in Central Africa—Report on a Reconnaissance in the Peloponnesus—Dr. Meyer on His Ascent of Kilimanjaro—The Island of Fernando Po—Dr. Luschan's Travels in Asia Minor.

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Notes on some Communes of Hainaut—Tambamba, an ancient City of the Incas—Iron on the Congo.

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BUENOS AIRES.—*Instituto Geográfico Argentino, Boletín.*
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